Patent Claims

1. A seagoing high-speed ship having an electrical steering propeller which [lacuna] a polyphase electric motor which is mounted under the stern of the ship via a shaft which can rotate and preferably has two parts in a gondola-like housing, and can be supplied with electrical drive power via a slipring arrangement, and can be rotated via drive motors, characterized in that the steering propeller is mounted in the stern of the ship via a flat collar bearing (7) in the vicinity of the outer skin (6), in particular above the waterline, with the slipring arrangement (8) being accommodated in the upper part (3) of the shaft (2, 3) at the level of the annular bearing (7), and with the drive motors for the rotary movement (9) being physically small and being arranged at least partially in the interior of the collar bearing (4), in order to achieve a small installed arrangement for the steering propeller.

2. The seagoing high-speed ship as claimed in claim 1, characterized in that the electrical steering propeller is mounted below the waterline in the stern of the ship.

3. The seagoing high-speed ship as claimed in claim 1 or 2, characterized in that the collar bearing (7) is connected to the structural parts of the ship's stern via an intermediate covering part (10), possibly with an annular configuration.

4. The seagoing high-speed ship as claimed in claim 3, characterized in that the intermediate covering part (10) is connected to the structural parts of the ship's stern via a box structure (11).

5. The seagoing high-speed ship as claimed in claim 3, characterized in that the intermediate covering part (10),

in particular having an annular shape, is connected to the double bottom (20) of the ship.

6. The seagoing high-speed ship as claimed in claim 3, 4 or 5, characterized in that the intermediate covering part (10) is arranged immediately under the lowermost cargo deck in the stern area, that is to say, in roro ships, immediately under the car deck (5).

7. The seagoing high-speed ship as claimed in claim 1, 2, 3, 4, 5 or 6, characterized in that the shaft (2, 3) is mounted under a steering propeller sealing cover (4) in the ship's stern.

8. The seagoing high-speed ship as claimed in claim 7, characterized in that the sealing cover (4) is a component of the car deck (5) when the ship is in the form of a roro ship.

9. The seagoing high-speed ship as claimed in claim 7 or 8, characterized in that the sealing cover (4) has access openings to individual appliances, such as the slipring arrangement (8), the drive motors (9) for the rotary movement, and other essential functional elements of the steering propeller.

10. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the drive motors (9) for the rotary movement are in the form of flat radial piston hydraulic motors.

11. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the collar bearing (7) has a toothed rim for the rotary movement on the rotatable ring (35) of the collar bearing (7), and the stationary ring is connected, preferably directly, to a ship structural part (31).

12. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the motors (33) for the rotary movement are arranged under the collar bearing (7) in the shaft upper part (36), being held via supports (37) and engaging via pinions (34) in the rotatable ring (35) of the collar bearing (7).

13. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that hydraulic pumps for driving the motors (33) are arranged in the shaft (36), in particular in the form of power packs.

14. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the electrical power for the slipring arrangement is supplied via cables which lead from the side to the slipring arrangement, in order to achieve a flat design.

15. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the slipring arrangement has a connecting element (21) for connection of cables coming from the side.

16. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the electrical steering propeller has at least one fan in the upper part (3) of the shaft, in particular to avoid heat accumulations in the shaft (2, 3) in the region of the auxiliary drives or the like.

17. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the upper diameter of the shaft upper part (3) is equal to or greater than the winding length of the electric motor (1).

18. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the upper part (3) of the steering propeller shaft (2, 3) is sealed in a fire-resistant manner from the deck located above it.

19. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the sliprings for supplying power to and monitoring the motor are at least partially in the form of concentric sliprings in the slipring arrangement (8).

20. A seagoing high-speed ship, in particular as claimed in one or more of the preceding claims, characterized in that the sliprings for supplying power to the electric motor are two-phase or three-phase sliprings, and in that a junction for a motor winding system having more than two or three phases is arranged behind the slipring arrangement, in particular via power semiconductors in the form of a local converter, which is arranged in the shaft (2, 3).

21. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the separating point between the upper part (3) and the lower part (2) of the shaft is located approximately at the same level as the outer skin (6) of the ship, and the steering propeller is preferably arranged so far aft in the stern that the joint element is located entirely above the waterline.

22. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the separating point between the upper part (3) and the lower part (2) of the shaft is arranged above the ship's outer skin in a shaft well in the stern of the ship.

23. The seagoing high-speed ship as claimed in one or more of the preceding claims, characterized in that the length of the ship (2, 3) is dimensioned, and the motor shaft of the steering propeller toward the stern is arranged in a rising manner, such that the flow produced by it approximately follows the stern profile of the ship.